

**Report**

EPA Region 5 Records Ctr.



325299

# **DNAPL INVESTIGATION**

## **DETREX CORPORATION**

### **ASHTABULA, OHIO**

Prepared for:  
Detrex Corporation  
Ashtabula, Ohio

September 15, 2005

**URS**

1375 Euclid Avenue  
Suite 600  
Cleveland, OH 44115  
(216) 622-2400  
Project No. 13810246

# **Table of Contents**

---

|                  |  |            |
|------------------|--|------------|
| <b>Section 1</b> | <b>Introduction.....</b>                             | <b>1-1</b> |
| 1.1              | Additional Contamination Source Identification ..... | 1-1        |
| <b>Section 2</b> | <b>Findings and Conclusions.....</b>                 | <b>2-1</b> |
| 2.1              | Geoprobe Investigation .....                         | 2-1        |
| 2.2              | Test Pit Excavation .....                            | 2-1        |
| 2.3              | Summary of Analytical Result .....                   | 2-2        |
| 2.4              | Photographs.....                                     | 2-2        |

## **LIST OF FIGURES**

Figure 1      Geoprobe and Test Pit Locations

## **LIST OF TABLES**

|         |                                  |
|---------|----------------------------------|
| Table 1 | Soil Boring Summary              |
| Table 2 | Test Pit Summary                 |
| Table 3 | Geoprobe Soil Analytical Results |
| Table 4 | Test Pit Soil Analytical Results |
| Table 5 | Groundwater Analytical Results   |

## **LIST OF APPENDICES**

Appendix A   Photographic Log

During the Fields Brook Action Group (FBAG) Technical meeting on August 30 and 31, 2005, preliminary field investigation results were provided of an ongoing investigation into recontamination of Fields Brook. This study was initiated after the discovery of PCBs in the brook sediment and the subsequent discovery of DNAPL in Fields Brook. While the PCBs are not attributable to Detrex, the DNAPL could be. The study conclusions stated that the Detrex Source Area was larger than formally presented and represented potential impact to Fields Brook. As a result of this presentation, additional study work was completed on Detrex property to identify if DNAPL is present in the subsurface between the source area and Fields Brook.

## **1.1 ADDITIONAL CONTAMINATION SOURCE IDENTIFICATION**

Results presented by FBAG during the technical meeting indicated several areas of elevated headspace readings within the floodplain areas of EU-6 and EU-8. Geoproses performed in the upland areas did not show elevated headspace readings. Preliminary geologic maps were shown that suggested the presence of erosional areas in the gray clay till formation.

A significant portion of the eastern portion of the Detrex property south of the DNAPL plume area was not investigated. This area is the most direct pathway to the brook and was further investigated as a part of this study.

The investigative work completed included:

- Excavate 15 test pits (8' long x 3' wide – 7' to 20' deep)
- Drill 21 geoproses borings
- Collect samples of soil for headspace readings
- Collect soil samples and analyze for VOC/SVOC

During the week of September 6, 2005, Detrex Corporation contracted URS Corporation and 2 subcontractors to collect additional data regarding DNAPL migration toward Fields Brook. The following sections summarize these findings. Figure 1 is a drawing that depicts the locations of all sampling points.

## **2.1 GEOPROBE INVESTIGATION**

Twenty one geoprosbes were drilled in specific areas at the site to assist in delineation. The following areas were investigated

- East of the closed lagoons
- East of the force main, west of the force main
- On the storm water detention pond embankment

During sampling of the geoprosbes, low levels of soil gas headspace readings were recorded. Soil samples and selected groundwater samples were collected for analytical testing. No DNAPL was observed in any of the geoprosbes. Table 1 is a summary of geoprobe observations.

## **2.2 TEST PIT EXCAVATION**

Test pits were excavated in areas where pathways were thought to exist in the subsurface. The following areas were investigated.

- Inside the estimated DNAPL plume near MW10S
- Across the stream channel running south to the stormwater detention basin
- In the wooded area south of the DNAPL plume area
- Along the entire bottom of the detention pond

Test pits were excavated on September 8 and 9. The test pits were left open for ongoing observation. The geologic profile in the test pits is consistent with current site understanding. A brown – gray lacustrine soil overlays a gray till formation. Occasional discontinuous thin sand lenses were encountered in the subsurface soils. All test pits except TP-5 and TP-9 showed soil gas headspace readings less than 100 ppm. The vapors dissipated quickly. Samples of the soil at the contact of the brown lacustrine soil and gray till were collected and analyzed for VOC/SVOCs. No DNAPL was observed in any test pit excavated in this area. Two test pits (TP-6 and TP-7) showed a small amount of water seepage after the excavations were completed. Table 2 is a summary of test pit observations.

On September 13, observations in the test pits were as follows:

- TP-10 and TP-11 are caved in and dry
- TP-16 has a little water in the bottom
- TP-14, 8 and 7 are caved in with water in the bottom

- All other pits are dry

### **2.3 SUMMARY OF ANALYTICAL RESULT**

Analytical results from soils collected near the interface of the brown and gray clay are provided in the attached summary tables (Tables 3 and 4). Groundwater analytical results are also presented on the summary table (Table 5).

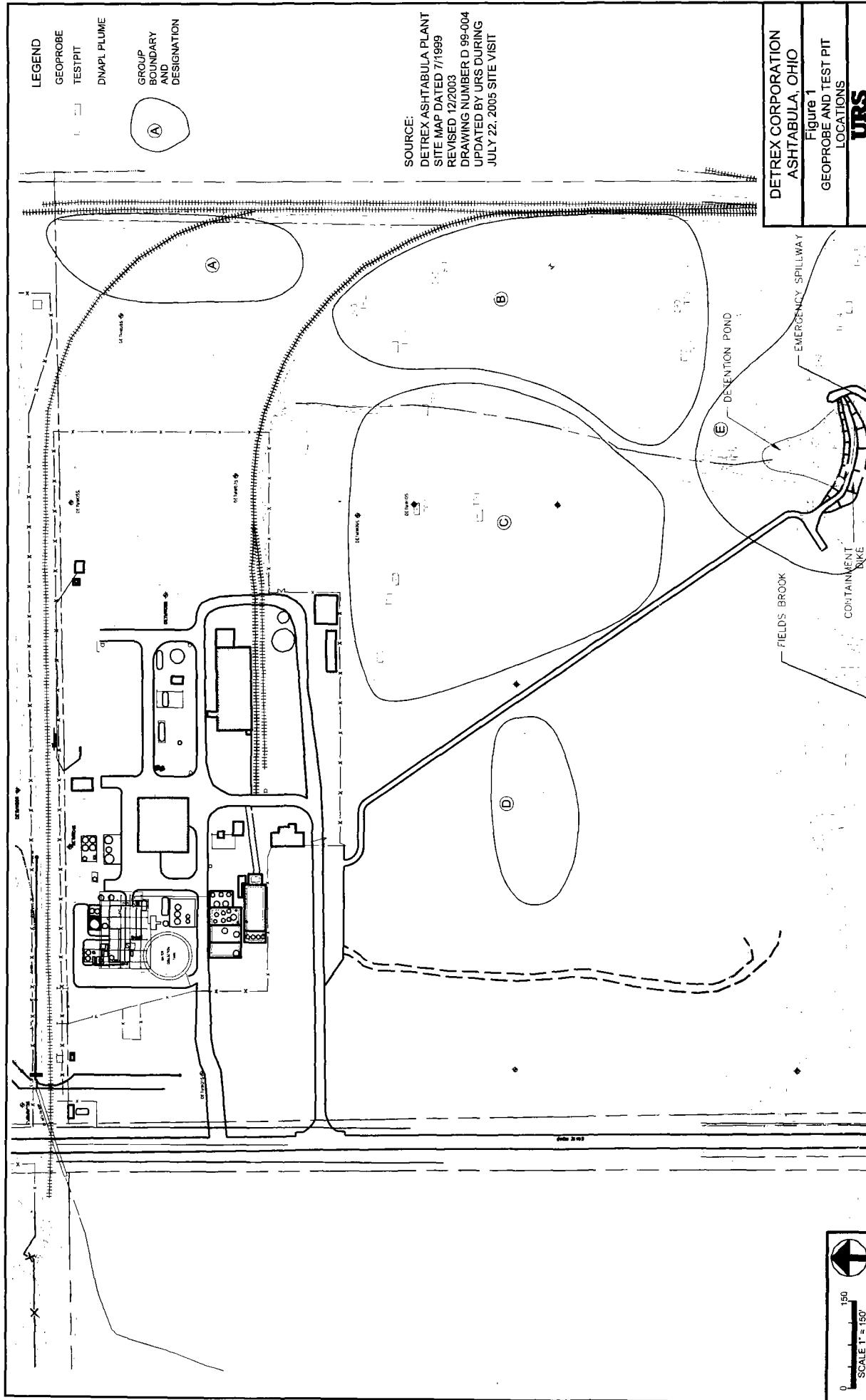
The highest VOC detected in soil was TCE in TP-6 at a concentration of 82 mg/kg. Considering this concentration, TCE is not being detected at a saturation level which is conservatively estimated to be 800 mg/kg. This indicates that the soil is not saturated with TCE in the samples above the clay till and is not mobile.

Groundwater analytical results show chemical concentrations below detection limits for VOCs and SVOCs of concern. However, SB518 located on the stormwater detention pond dike showed low levels of VOCs and SVOCs for chemicals common to Fields Brook. This boring was installed beneath the stormwater impoundment, which was constructed over floodplain material and not natural gray clay.

### **2.4 PHOTOGRAPHS**

Appendix A contains photographs of select test pits that were excavated. Locations of test pits can be determined from Figure 1.







**Table 1**  
**Soil Boring Summary**  
**September 7-9, 2005**  
**Detrex Corporation**

| Boring ID | Total Depth | Max. Headspace<br>(PPMV) |
|-----------|-------------|--------------------------|
| GP-500    | 12          | 0.2                      |
| GP-501    | 16          | 0                        |
| GP-502    | 12          | 0.2                      |
| GP-503    | 12          | 0                        |
| GP-504    | 12          | 0.4                      |
| GP-505    | 12          | 1                        |
| GP-506    | 12          | 0.8                      |
| GP-507    | 12          | 0.8                      |
| GP-508    | 16          | 0.8                      |
| GP-509    | 12          | 0                        |
| GP-510    | 16          | 0                        |
| GP-511    | 12          | 0                        |
| GP-512    | 12          | 0                        |
| GP-513    | 12          | 0                        |
| GP-514    | 16          | 0                        |
| GP-515    | 12          | 0                        |
| GP-516    | 16          | 6.5                      |
| GP-517    | 12          | 0.2                      |
| GP-518    | 16          | 77                       |
| GP-519    | 12          | 70                       |
| GP-520    | 12          | 0                        |
| GP-521    | 12          | 0                        |

**Table 2**  
**Test Pit Summary**  
**September 7-9, 2005**  
**Detrex Corporation**

| Pit ID | Total Depth | Maximum PID<br>(PPMV) | Headspace PID<br>(PPMV) |
|--------|-------------|-----------------------|-------------------------|
| TP-1   | 13.8        | 0                     | NA                      |
| TP-2   | 12          | 33                    | 0.6                     |
| TP-3   | 10          | 0                     | 0                       |
| TP-4   | 12          | 3                     | 0                       |
| TP-5   | 16          | 12                    | 2.4                     |
| TP-6   | 20          | 10                    | 11                      |
| TP-7   | 9           | 0                     | NA                      |
| TP-8   | 8           | 0                     | NA                      |
| TP-9   | 7           | 14                    | 346, 12                 |
| TP-10  | 15          | 390                   | 79                      |
| TP-11  | 13          | 0                     | 1.6                     |
| TP-12  | 16          | 0                     | NA                      |
| TP-13  | 12.5        | 0                     | NA                      |
| TP-14  | 13          | 0                     | NA                      |
| TP-15  | 12.5        | 0                     | NA                      |
| TP-16  | 13          | 0                     | NA                      |

NA      Indicates that headspace screening was not performed.

**Table 3**  
**Geoprobe Soil Results**  
**Summary of Detected Chemicals**  
**Detrex Site - September 2005**

| Parameter                     | Units | Geoprobe Borings         |                          |                          |                          |                          |                          | SB521 08-10'<br>9/9/2005 |
|-------------------------------|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                               |       | SB505 08-12'<br>9/7/2005 | SB508 10-12'<br>9/7/2005 | SB516 14-16'<br>9/8/2005 | SB518 14-16'<br>9/8/2005 | SB519 00-02'<br>9/9/2005 | SB519 02-04'<br>9/9/2005 |                          |
| <b>Volatile Organics</b>      |       |                          |                          |                          |                          |                          |                          |                          |
| 1,1,2,2-Tetrachloroethane     | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | <b>0.83</b>              | 0.0063 U                 |
| 1,1,2-Trichloroethane         | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| 1,1-Dichloroethene            | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| 1,2,3-Trichloropropane        | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| 1,2-Dichloroethane            | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| Carbon disulfide              | mg/Kg | 0.0061 U                 | 0.006 U                  | <b>0.36</b>              | <b>0.35</b>              | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| Chloroform                    | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0064 U                 |
| cis-1,2-Dichloroethene        | mg/Kg | 0.0061 U                 | 0.006 U                  | <b>2.5</b>               | <b>0.88</b>              | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| Tetrachloroethene             | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | <b>0.52</b>              | <b>0.57</b>              | <b>6.9</b>               | 0.0063 U                 |
| trans-1,2-Dichloroethene      | mg/Kg | 0.0061 U                 | 0.006 U                  | 0.21 U                   | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| Trichloroethene               | mg/Kg | 0.0061 U                 | 0.006 U                  | <b>0.089 J</b>           | <b>0.34</b>              | <b>1.8</b>               | <b>25</b>                | 0.0063 U                 |
| Vinyl chloride                | mg/Kg | 0.0061 U                 | 0.006 U                  | <b>0.27</b>              | 0.19 U                   | 0.22 U                   | 0.22 U                   | 0.0063 U                 |
| <b>Semi-Volatile Organics</b> |       |                          |                          |                          |                          |                          |                          |                          |
| 1,2-Dichlorobenzene           | mg/Kg | 0.37 U                   | 0.36 U                   | 0.38 U                   | 0.36 U                   | 0.38 U                   | 0.38 U                   | -                        |
| Hexachlorobenzene             | mg/Kg | 0.37 U                   | 0.36 U                   | 0.38 U                   | <b>0.44</b>              | <b>0.41</b>              | 0.38 U                   | 0.38 U                   |
| Hexachlorobutadiene           | mg/Kg | 0.37 U                   | 0.36 U                   | 0.38 U                   | <b>0.7</b>               | 0.38 U                   | 0.38 U                   | 0.38 U                   |
| Hexachloroethane              | mg/Kg | 0.37 U                   | 0.36 U                   | 0.38 U                   | <b>0.44</b>              | 0.38 U                   | 0.38 U                   | 0.38 U                   |

U = The analyte was analyzed for, but was not detected. Value shown is the reporting limit.

J = Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

E = Estimated concentration because the result was above the range of the instrument calibration curve.

-- = Sample was not analyzed for this parameter.

**Table 4**  
**Test Pit Soil Results**  
**Summary of Detected Chemicals**  
**Detrex Site - September 2005**

| Parameter                     | Units | Test Pits       |                 |                 |                 |                 |                  |                  |                  |                  |
|-------------------------------|-------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|
|                               |       | TP2<br>9/7/2005 | TP3<br>9/7/2005 | TP4<br>9/7/2005 | TP5<br>9/8/2005 | TP6<br>9/7/2005 | TP6W<br>9/8/2005 | TP9A<br>9/7/2005 | TP9B<br>9/7/2005 | TP10<br>9/8/2005 |
| <b>Volatile Organics</b>      |       |                 |                 |                 |                 |                 |                  |                  |                  |                  |
| 1,1,2,2-Tetrachloroethane     | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 6.8             | 0.22 E           | 20               | 0.0072 U         | 0.21 U           |
| 1,1,2-Trichloroethane         | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.021            | 0.22 U           | 0.0044 J         | 0.21 U           |
| 1,1-Dichloroethene            | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.012            | 0.22 U           | 0.0072 U         | 0.21 U           |
| 1,2,3-Trichloropropane        | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.004 J          | 0.22 U           | 0.0072 U         | 0.21 U           |
| 1,2-Dichloroethane            | mg/Kg | 0.006 U         | 0.0059 U        | 0.056           | 0.2 U           | 0.25 U          | 0.0063 U         | 0.22 U           | 0.0072 U         | 0.21 U           |
| Carbon disulfide              | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.34            | 0.52            | 0.0093           | 0.41             | 0.0072 U         | 0.4              |
| Chloroform                    | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.0042 J         | 0.22 U           | 0.0072 U         | 0.21 U           |
| cis-1,2-Dichloroethene        | mg/Kg | 0.046           | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.2 E            | 2.1              | 1.3              | 0.2 J            |
| Tetrachloroethene             | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 2.2             | 3.3             | 4.1              | 13               | 2.7              | 7.7              |
| trans-1,2-Dichloroethene      | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.047            | 0.22 U           | 0.01             | 0.21 U           |
| Trichloroethene               | mg/Kg | 9.2             | 0.0029 J        | 0.004 J         | 1.2             | 16              | 46               | 9.9              | 17               | 0.0027 J         |
| Vinyl chloride                | mg/Kg | 0.006 U         | 0.0059 U        | 0.006 U         | 0.2 U           | 0.25 U          | 0.003 J          | 0.22 U           | 0.0072 U         | 0.21 U           |
| <b>Semi-volatile Organics</b> |       |                 |                 |                 |                 |                 |                  |                  |                  |                  |
| 1,2-Dichlorobenzene           | mg/Kg | 0.36 U          | 0.35 U          | 0.37 U          | 0.39 U          | 0.38 U          | 0.37 U           | 0.34 J           | 0.43 U           | 0.37 U           |
| Hexachlorobenzene             | mg/Kg | 0.36 U          | 0.35 U          | 0.37 U          | 2.8             | 3.7             | 0.37 U           | 3.5              | 0.43 U           | 0.37 U           |
| Hexachlorobutadiene           | mg/Kg | 0.36 U          | 0.35 U          | 0.37 U          | 2.8             | 9.2             | 0.99             | 1.6              | 0.43 U           | 0.37 U           |
| Hexachloroethane              | mg/Kg | 0.36 U          | 0.35 U          | 0.37 U          | 1.3             | 4.5             | 0.12 J           | 4.2              | 0.24 J           | 2.4              |

U = The analyte was analyzed for, but was not detected. Value shown is the reporting limit.

J = Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

E = Estimated concentration because the result was above the range of the instrument calibration curve.

-- = Sample was not analyzed for this parameter.

**Table 5**  
**Groundwater Results**  
**Summary of Detected Chemicals**  
**Detrex Site - September 2005**

| Parameter                    | Units | Groundwater              |                          |                          | Trip Blanks              |                        |
|------------------------------|-------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|
|                              |       | SB508-090905<br>9/9/2005 | SB510-090905<br>9/9/2005 | SB515-090905<br>9/9/2005 | SB518-090905<br>9/9/2005 | Trip Blank<br>9/7/2005 |
| <b>Volatile Organics</b>     |       |                          |                          |                          |                          |                        |
| 1,1,2,2-Tetrachloroethane    | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.46                     | 0.005 U                |
| 1,1,2-Trichloroethane        | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.017                    | 0.005 U                |
| 1,1-Dichloroethene           | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.016                    | 0.005 U                |
| Chlorobenzene                | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.005 U                |
| cis-1,2-Dichloroethene       | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 4.6                      | 0.005 U                |
| Pentachloroethane            | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.047                    | 0.005 U                |
| Tetrachloroethene            | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.69                     | 0.005 U                |
| trans-1,2-Dichloroethene     | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 0.16                     | 0.005 U                |
| Trichloroethene              | mg/L  | 0.005 U                  | 0.005 U                  | 0.005 U                  | 12                       | 0.005 U                |
| Vinyl chloride               | mg/L  | 0.002 U                  | 0.002 U                  | 0.002 U                  | 0.12                     | 0.002 U                |
| <b>Semivolatile Organics</b> |       |                          |                          |                          |                          |                        |
| 1,2-Dichlorobenzene          | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.022                    | -                      |
| 1,3-Dichlorobenzene          | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.0026 J                 | -                      |
| bis(2-chloroisopropyl)ether  | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.012                    | -                      |
| bis(2-Ethylhexyl)phthalate   | mg/L  | 0.014                    | 0.032                    | 0.01 U                   | 0.0046 J                 | -                      |
| Diethyl phthalate            | mg/L  | 0.01 U                   | 0.0062 J                 | 0.0036 J                 | 0.004 J                  | -                      |
| Di-n-butyl phthalate         | mg/L  | 0.014                    | 0.037                    | 0.025                    | 0.01 U                   | -                      |
| Hexachlorobenzene            | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.033                    | -                      |
| Hexachlorobutadiene          | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.074                    | -                      |
| Hexachloroethane             | mg/L  | 0.01 U                   | 0.01 U                   | 0.01 U                   | 0.23                     | -                      |

U = The analyte was analyzed for, but was not detected. Value shown is the reporting limit.

J = Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

-- = Sample was not analyzed for this parameter.



**Client Name:**  
Detrex Chemical**Site Location:**  
1100 State Rd, Ashtabula, Ohio**Project No.**  
13810732**Photo No. 1****Date:**  
0908/05**Description:**

Test Pit 16

**Photo No. 2****Date:**  
0908/05**Description:**

Test Pit 9



**Client Name:**  
Detrex Chemical**Site Location:**  
1100 State Rd, Ashtabula, Ohio**Project No.**  
13810732**Photo No. 3****Date:**  
09/08/05**Description:**

Test Pit 12

**Photo No. 4****Date:**  
09/08/05**Description:**

Test Pit 11

